

FORM PTO-1449
(Modified)U.S. Department of Commerce
Patent and Trademark Office

Attorney Docket No.: COOL-00700

Serial No.: 10/669,495

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Use Several Sheets if Necessary)

Applicants: Thomas W. Kenny et al.

Filing Date: September 23, 2003

Group Art Unit: 3746

(37 CFR § 1.98(b))

U.S. PATENT DOCUMENTS

Examiner Initials		Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date
	AA						
	AB						
	AC						
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FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

		Document Number	Publication Date	Country / Patent Office	Class	Subclass	Translation	
							Yes	No
<i>mk</i>	AK	JP 10-99592	04/21/98	JP	D06F	39/08		X
<i>mk</i>	AL	JP 2001-326311	11/22/01	JP	H01L	23/427		X
	AM							
	AN							
	AO							

OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)

	AP	
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Examiner: *[Signature]*

Date Considered: 10-5-05

EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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(Modified)

OCT 08 2004

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(37 CFR § 1.889)

U.S. PATENT DOCUMENTS

Examiner Initials		Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date
amk	AA	5,179,500	01/12/93	Koubek et al.	361	385	04/02/91
	AB	5,839,290	11/24/98	Nazeri	62	119	01/24/97
	AC	2002/0096312 A1	07/25/02	Korin	165	58	12/04/01
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mk	AA	3,267,859	08/23/66	S. T. Jutila	103	1	02/18/64
	AB	3,554,669	01/12/71	T. D. Reader	417	48	12/04/68
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	AD	6,770,183 B1	08/03/04	Hencken et al.	204	600	07/26/01
	AE	2003/0022505 A1	01/30/03	Ouellet et al.	438	704	07/24/01
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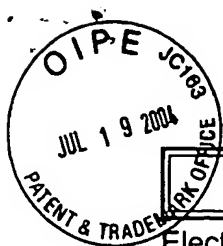
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Date Considered: 10-5-05

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FORM PTO-1469 (Modified)		U.S. Department of Commerce Patent and Trademark Office		Attorney Docket No.: COOL-00700		Serial No.: 10/669,495	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT SEP 03 2004 (Seventy Sheets If Necessary)				Applicants: Thomas W. Kenny et al.			
(37 CFR § 1.905)				Filing Date: September 23, 2003		Group Art Unit: 3746	
U.S. PATENT DOCUMENTS							
Examiner Initials	Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date	
mk	AA	6,632,719 B1	10/14/03	DeBoer et al.	438	381	08/31/00
mk	AB	2004/0120827 AI	06/24/04	Kim et al.	417	48	12/18/02
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ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

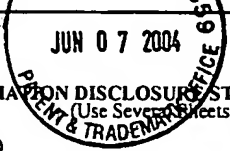
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Title of Invention	MICRO-FABRICATED ELECTROKINETIC PUMP WITH ON-FRIT ELECTRODE																																																																														
<p>Application Number: 10/669495 </p> <p>Confirmation Number: 3987</p> <p>First Named Applicant: Thomas Kenny</p> <p>Attorney Docket Number:</p> <p>Search string: (3948316 or 5161089 or 5228502 or 5239443 or 5265670 or 5978220 or 5993750 or 6729383).pn.</p> <p>Certification: This Information Disclosure Statement was submitted under the following conditions, which satisfies the requirement under 37 CFR 1.97(e). The filer certified:</p> <p>That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.</p> <p>US Patent Documents</p> <p>Note: Applicant is not required to submit a paper copy of cited US Patent Documents</p> <table border="1"><thead><tr><th>init</th><th>Cite.No.</th><th>Patent No.</th><th>Date</th><th>Patentee</th><th>Kind</th><th>Class</th><th>Subclass</th></tr></thead><tbody><tr><td><input checked="" type="checkbox"/></td><td>1</td><td>3948316</td><td>1976-04-06</td><td>Souriau</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>2</td><td>5161089</td><td>1992-11-03</td><td>Chu et al.</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>3</td><td>5228502</td><td>1993-07-20</td><td>Chu et al.</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>4</td><td>5239443</td><td>1993-08-24</td><td>Fahey et al.</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>5</td><td>5265670</td><td>1993-11-30</td><td>Zingher</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>6</td><td>5978220</td><td>1999-11-02</td><td>Frey et al.</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>7</td><td>5993750</td><td>1999-11-30</td><td>Ghosh et al.</td><td></td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>8</td><td>6729383</td><td>2004-05-04</td><td>Cannell et al.</td><td>B1</td><td></td><td></td></tr></tbody></table>								init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass	<input checked="" type="checkbox"/>	1	3948316	1976-04-06	Souriau				<input type="checkbox"/>	2	5161089	1992-11-03	Chu et al.				<input type="checkbox"/>	3	5228502	1993-07-20	Chu et al.				<input type="checkbox"/>	4	5239443	1993-08-24	Fahey et al.				<input type="checkbox"/>	5	5265670	1993-11-30	Zingher				<input type="checkbox"/>	6	5978220	1999-11-02	Frey et al.				<input type="checkbox"/>	7	5993750	1999-11-30	Ghosh et al.				<input type="checkbox"/>	8	6729383	2004-05-04	Cannell et al.	B1		
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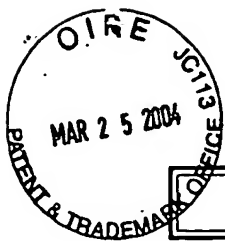
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(37 CFR § 1.98(b))			Filing Date: September 23, 2003	Group Art Unit: 3746

U.S. PATENT DOCUMENTS							
Examiner Initials	Serial / Patent Number	Issue Date	Applicant / Patentee	Class	Subclass	Filing Date	
<div style="font-size: 2em; margin-left: 10px;">mk</div>	AA	5,371,529	12/06/94	Eguchi et al.	347	7	10/16/92
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	AC	5,534,471	07/09/96	Carolan et al.	502	4	01/12/94
	AD	5,632,876	05/27/97	Zanzucchi et al.	204	600	06/06/95
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3-25-04

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

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Title of
Invention

**MICRO-FABRICATED ELECTROKINETIC PUMP WITH
ON-FRIT ELECTRODE**

Application Number: 10/669495



Confirmation Number: 3987

First Named Applicant: Thomas Kenny

Attorney Docket Number:

Search string: (3654988 or 3817321 or 3823572 or 3923426
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US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

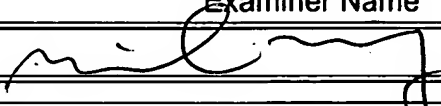
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11	4540115	1985-09-10	Hawrylo
12	4450472	1984-05-22	Tuckerman et al.
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33	5096388	1992-03-17	Weinberg
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45	5308429	1994-05-03	Bradley
46	5309319	1994-05-03	Messina

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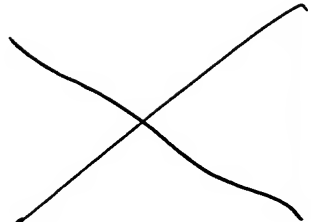
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16	5692558	1997-12-02	Hamilton et al.
17	5696405	1997-12-09	Weld
18	5703536	1997-12-30	Davis et al.
19	5704416	1998-01-06	Larson et al.
20	5727618	1998-03-17	Mundinger et al.
21	5759014	1998-06-02	Van Lintel
22	5763951	1998-06-09	Hamilton et al.
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33	5876655	1999-03-02	Fisher
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Signature

Examiner Name	Date
	10-5-05



ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

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Title of
Invention

MICRO-FABRICATED ELECTROKINETIC PUMP WITH
ON-FRIT ELECTRODE

Application Number: 10/669495



Confirmation Number: 3987

First Named Applicant: Thomas Kenny

Attorney Docket Number:

Search string: (6068752 or 6090251 or 6096656 or 6100541
or 6101715 or 6119729 or 6126723 or 6129145
or 6129260 or 6131650 or 6146103 or 6154363
or 6159353 or 6171067 or 6174675 or 6176962
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or 6227809 or 6234240 or 6238538 or 6277257
or 6287440 or 6301109 or 6313992 or 6317326
or 6321791 or 6322753 or 6324058 or 6337794
or 6351384 or 6388317 or 6396706 or 6400012
or 6406605 or 6415860 or 6416642 or 6417060
or 6424531 or 6443222 or 6444461 or 6457515
or 6495015 or 6537437 or 6543521 or 6553253
or 6572749 or 6588498).pn.

US Patent Documents

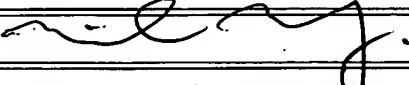
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12	6154363	2000-11-28	Chang	
13	6159353	2000-12-12	West et al.	
14	6171067	2001-01-09	Parce	B1
15	6174675	2001-01-16	Chow et al.	B1
16	6176962	2001-01-23	Soane et al.	B1
17	6186660	2001-02-13	Kopf-Sill et al.	B1
18	6210986	2001-04-03	Arnold et al.	B1
19	6216343	2001-04-17	Leland et al.	B1
20	6221226	2001-04-24	Kopf-Sill	B1
21	6227809	2001-05-08	Forster et al.	B1
22	6234240	2001-05-22	Cheon	B1
23	6238538	2001-05-29	Parce et al.	B1
24	6277257	2001-08-21	Paul et al.	B1
25	6287440	2001-09-11	Arnold et al.	B1
26	6301109	2001-10-09	Chu et al.	B1
27	6313992	2001-11-06	Hildenbrandt	B1
28	6317326	2001-11-13	Vogel et al.	B1
29	6321791	2001-11-27	Chow	B1
30	6322753	2001-11-27	Lindberg et al.	B1
31	6324058	2001-11-27	Hsiao	B1
32	6337794	2002-01-08	Agonafer et al.	B1
33	6351384	2002-02-26	Daikoku et al.	B1
34	6388317	2002-05-14	Reese	B1
35	6396706	2002-05-28	Wohlfarth	B1
36	6400012	2002-06-04	Miller et al.	B1
37	6406605	2002-06-18	Moles	B1
38	6415860	2002-07-09	Kelly et al.	B1
39	6416642	2002-07-09	Alajoki et al.	B1
40	6417060	2002-07-09	Tavkhelidze et al.	B1
41	6424531	2002-07-23	Bhatti et al.	B1
42	6443222	2002-09-03	Yun et al.	B1
43	6444461	2002-09-03	Knapp et al.	B1
44	6457515	2002-10-01	Vafai et al.	B1
45	6495015	2002-12-17	Schoeniger et al.	B1
46	6537437	2003-03-25	Galambos et al.	B1

47	6543521	2003-04-08	Sato et al.	B1
48	6553253	2003-04-22	Chang	B1
49	6572749	2003-06-03	Paul et al.	B1
50	6588498	2003-07-08	Reysin et al.	B1

Signature

Examiner Name	Date
	10-5-05



ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of
Invention

**MICRO-FABRICATED ELECTROKINETIC PUMP WITH
ON-FRIT ELECTRODE**

Application Number: 10/669495



Confirmation Number: 3987

First Named Applicant: Thomas Kenny

Attorney Docket Number:

Search string: (6591625 or 6632655 or 20010016985 or
20010024820 or 20010044155 or 20010045270
or 20010046703 or 20010055714 or
20020011330 or 20020134543).pn.

US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

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<input checked="" type="checkbox"/>	1	6591625	2003-07-15	Simon	B1		
<input checked="" type="checkbox"/>	2	6632655	2003-10-14	Mehta et al.	B1		

US Published Applications

Note: Applicant is not required to submit a paper copy of cited US Published Applications

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<input type="checkbox"/>	8	20020134543	2002-09-26	Estes et al.	A1		

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3-25-04

Examiner Name	Date
<i>[Signature]</i>	10-5-05

8-5-05

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of Invention	MICRO-FABRICATED ELECTROKINETIC PUMP WITH ON FRIT-ELECTRODE
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Application Number : 10/669495
 Confirmation Number: 3987
 First Named Applicant: Thomas Kenny
 Attorney Docket Number:
 Art Unit:
 Examiner:
 Search string: (0596062 or 2273505 or 4211208 or 6397932 or 20020075645).pn



Certification: This Information Disclosure Statement was submitted under the following conditions, which satisfies the requirement under 37 CFR 1.97(e). The filer certified:

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement.

US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

init	Cite.No.	Patent No.	Date	Patentee	Kind	Class	Subclass
1	1	0596062	1897-12-28	W. P. Firey			
2	2	2273505	1942-02-17	R. R. Florian			
3	3	4211208	1980-07-08	Lindner			
4	4	6397932	2002-06-04	Calaman et al.	B1		

US Published Applications

Note: Applicant is not required to submit a paper copy of cited US Published Applications

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1	1	20020075645	2002-06-20	Kitano et al.	A1		

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Examiner Name	Date
<i>[Signature]</i>	10-5-05

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of Invention	MICRO-FABRICATED ELECTROKINETIC PUMP WITH ON-FRIT ELECTRODE
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Application Number : 10/669495



Confirmation Number: 3987

First Named Applicant: Thomas Kenny

Attorney Docket Number:

Art Unit:

Examiner:

Search string: (3361195 or 3771219 or 4644385 or 4893174 or 5386143 or 5658831 or 5675473 or 6140860 or 6477045 or 6492200 or 6578626).pn

Certification: This Information Disclosure Statement was submitted under the following conditions, which satisfies the requirement under 37 CFR 1.97(e). The filer certified:

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement.

US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

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mk	1	3361195	1968-01-02	A. Meyerhoff et al.			
	2	3771219	1973-11-13	Tuzi et al.			
	3	4644385	1987-02-17	Nakanishi et al.			
	4	4893174	1990-01-09	Yamada et al.			
	5	5386143	1995-01-31	Fitch			
	6	5658831	1997-08-19	Layton et al.			
	7	5675473	1997-10-07	McDunn et al.			
	8	6140860	2000-10-31	Sandhu et al.			
	9	6477045	2002-11-05	Wang	B1		
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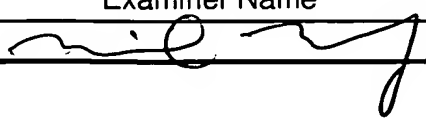
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ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of Invention	MICRO-FABRICATED ELECTROKINETIC PUMP WITH ON-FRIT ELECTRODE						
Application Number :	10/669495						
Confirmation Number:	3987						
First Named Applicant:	Thomas Kenny						
Attorney Docket Number:							
Art Unit:							
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ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

Stylesheet Version v18.0

Title of Invention	MICRO-FABRICATED ELECTROKINETIC PUMP WITH ON-FRIT ELECTRODE
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Application Number : 10/669495
 Confirmation Number: 3987
 First Named Applicant: Thomas Kenny



Attorney Docket Number:

Art Unit:

Examiner:

Search string: (5043797 or 5490117 or 5740013 or 5768104 or 5921087 or 6366467 or 6459581 or 6600220 or 6743664 or 20020121105 or 20030121274 or 20040040695 or 20040052049 or 20040089008 or 20040125561 or 20040160741 or 20040188069).pn

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US Patent Documents

Note: Applicant is not required to submit a paper copy of cited US Patent Documents

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	5	5921087	1999-07-13	Bhatia et al.			
	6	6366467	2002-04-02	Patel et al.	B1		
	7	6459581	2002-10-01	Newton et al.	B1		
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US Published Applications

Note: Applicant is not required to submit a paper copy of cited US Published Applications

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	4	20040052049	2004-03-18	Wu et al.	A1		
	5	20040089008	2004-05-13	Tilton et al.	A1		
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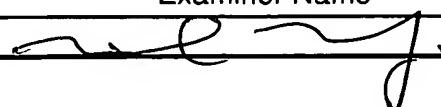
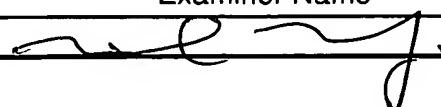
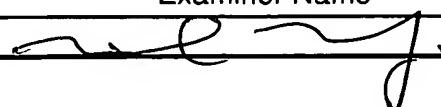
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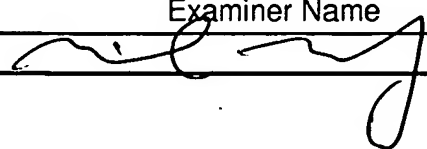
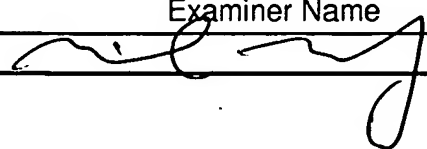
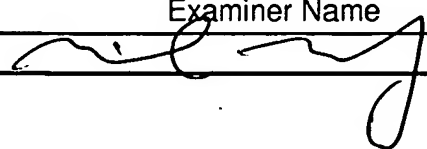
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1-27-05

ELECTRONIC INFORMATION DISCLOSURE STATEMENT

Electronic Version v18

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FORM PTO-1449
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Patent and Trademark Office

Attorney Docket No.: COOL-00700

Serial No.: 10/669,495

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Use Several Sheets If Necessary)

Applicants: Thomas W. Kenny et al.

Filing Date: September 23, 2003

Group Art Unit: 3746

(37 CFR § 1.98(b))

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		Document Number	Publication Date	Country / Patent Office	Class	Subclass	Translation	
							Yes	No
mk	AA	97212126.9	03/04/97	CN	BO1D	61/42		X
mk	AB	2000-277540	10/06/00	JP	H01L	21/50		X

OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)

mk	AC	Stephen C. Jacobson et al., "Fused Quartz Substrates for Microchip Electrophoresis", Analytical Chemistry, Vo. 67, No. 13, July 1, 1995, pages 2059-2063.
	AD	Kendra V. Sharp et al., "Liquid Flows in Microchannels", 2002, Vol. 6, pages 6-1 to 6-38.
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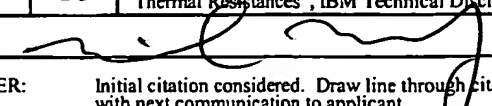
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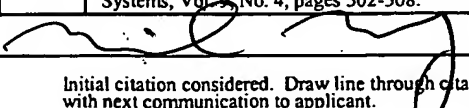
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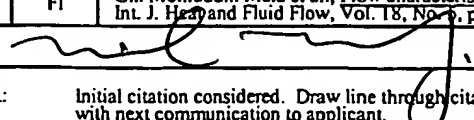
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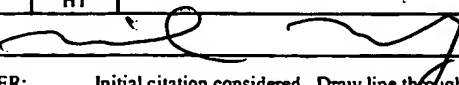
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(37 CFR § 1.98(b))				Filing Date: September 23, 2003	Group Art Unit: 3746
OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)					
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OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)					
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mk	DH	✓	"Thermal Control Hardware for Accelerated Run-In Testing of Multi-Chip Modules", IBM Technical Disclosure Bulletin, Vol. 32, No. 5A, October 1989, page 129-130.				
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FA	✓	C.R. Friedrich et al., <u>Micro heat exchangers fabricated by diamond machining</u> , January 1994, Precision Engineering, Vol. 16, No. 1, pages 56-59.			
FB	✓	Mali Mahalingam, <u>Thermal Management in Semiconductor Device Packaging</u> , 1985, Proceedings of the IEEE, Vol. 73, No. 9, September 1985, pages 1396-1404.			
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FD	✓	T.M. Adams et al., <u>Applicability of traditional turbulent single-phase forced convection correlations to non-circular microchannels</u> , 1999, Int. J. Heat and Mass Transfer 42 (1999) pages 4411-4415.			
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use Several Sheets If Necessary)				Applicants: Thomas W. Kenny et al.	
				Filing Date: September 23, 2003	Group Art Unit: 3746
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OTHER DOCUMENTS (Including Author, Title, Date, Relevant Pages, Place of Publication)					
mk	FJ	✓	W.E. Morf et al., <u>Partial electroosmotic pumping in complex capillary systems Part 1: Principles and general theoretical approach</u> , October 16, 2000, <u>Sensors and Actuators B 72 (2001)</u> , pages 266-272.		
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	FM	✓	Sarah Arunlanandam et al., <u>Liquid transport in rectangular microchannels by electroosmotic pumping</u> , 2000, <u>Colloids and Surfaces A: Physicochemical and Engineering Aspects</u> Vol. 161 (2000), pages 89-102.		
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	FQ	✓	Chris Bourne, <u>Cool Chips plc RECEIVES NANOTECH MANUFACTURING PATENT</u> , July 31, 2002, pages 1-2.		
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	FX	✓	J. G. Sunderland, <u>Electrokinetic dewatering and thickening. I. Introduction and historical review of electrokinetic applications</u> , September 1987, <u>Journal of Applied Electrochemistry</u> Vol. 17, No. 5, pages 889-898.		
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	GF	✓	X. Yin et al., <u>Uniform Channel Micro Heat Exchangers</u> , 1997, <u>Journal of Electronic Packaging</u> June 1997, Vol. 119, No. 2, pages 89-94.		
	GG	✓	Chun Yang et al., <u>Modeling forced liquid convection in rectangular microchannels with electrokinetic effect</u> , 1998, <u>International Journal of Heat and Mass Transfer</u> 41 (1998), pages 4229-4249.		
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	GS	Charlotte Gillot et al., <u>Integrated Single and Two-Phase Micro Heat Sinks Under IGBT Chips</u> , IEEE Transactions on Components and Packaging Technology, Vol. 22 No. 3, September 1999, pages 384-389.			
	GT	X.F. Peng et al., "Enhancing the Critical Heat Flux Using Microchanneled Surfaces", Enhanced Heat Transfer, 1998, Vol. 5 pp. 165-176.			
	GU	H. Krumm "Chip Cooling", IBM Technical Disclosure Bulletin, Vol. 20, No. 7, December 1977, pg. 2728.			
	GV	Jae-Mo Koo et al., "Modeling of Two-Phase Microchannel Heat Sinks for VLSI Chips", Mech. Eng. Depart. of Stanford University, pp. 422-426.			
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